

MUS
4290
.31

HARVARD UNIVERSITY



Ernst Mayr Library
of the Museum of
Comparative Zoology

MCZ
LIBRARY

APR 18 2007

HARVARD
UNIVERSITY

Simpson's Unionid Types
and Miscellaneous Unionid Types
in the
National Museum of Natural History

BY

RICHARD L. JOHNSON
ASSOCIATE IN MALACOLOGY
MUSEUM OF COMPARATIVE ZOOLOGY



National Museum of Natural History
Washington, D.C.

Special Occasional Publication
No. 4

Published by the
Department of Malacology
Museum of Comparative Zoology
Harvard University
Cambridge, Massachusetts 02138

1975

SIMPSON'S UNIONID TYPES AND MISCELLANEOUS UNIONID

TYPES IN THE NATIONAL MUSEUM OF NATURAL HISTORY

COMP. ZOOL
LIBRARY

By Richard I. Johnson

OCT 7 1975

HARVARD
UNIVERSITY

Charles Torrey Simpson (1846-1932) was born at Tiskilwa, Illinois, and died at Lemon City, Florida. From 1889-1902, he was an Aid in the Division of Mollusks at the United States National Museum, now the National Museum of Natural History. His time there was spent studying the Unionacea and he wrote the first synthesis of this world wide family, Synopsis of the Naiades, or Pearly Fresh-Water Mussels (1900). In this work, Simpson boldly and correctly reduced many of the nominal species of Isaac Lea and others to synonymy. His courage in dealing with those of the former was noteworthy since the work was published with support from Lea's daughter and son-in-law. Simpson retired to Florida in 1902, where he wrote two books in the natural history of the state. He also made an extensive collection of Liguus, the well known tree snail, and published the results of these efforts (1929).

In 1914, Simpson's work on the unionids, augmented by descriptions, expanded with revisions, and brought up to date, was privately published by Bryant Walker of Detroit, Michigan, under the title, A Descriptive Catalogue of the Naiades or Pearly

Fresh-water Mussels (1914). Numerous genera and higher categories were introduced in these two monographs, but they are not included here, since they are all easily available in the latter work.

Simpson, while diligent in the locating and marking of Lea's types, was not always careful in the selection and preservation of his own. Some are missing, and a number of them were never figured. That some were not figured is understandable, since, though they were intended, no illustrations accompanied the 1914 work. All of the measured unfigured types which could be located are figured here. In some cases it seemed desirable to select lectotypes when syntypes were available.

ACKNOWLEDGMENTS

Thanks are extended to Drs. Joseph P. E. Morrison, Harald A. Rehder and Joseph Rosewater of the National Museum of Natural History who, over the years, have been most liberal in allowing me access to the unionid types in their charge. Special thanks are due to the latter who arranged to have photographs made of many types. Drs. Henry van der Schalie, John B. Burch and Charlotte M. Patterson made available one of Simpson's types which is in the Museum of Zoology, University of Michigan, and permitted the author to search for another which could not be found. The William F. Milton Fund, Harvard University, generously paid for the photographs used in this paper.

BIBLIOGRAPHY OF CHARLES T. SIMPSON'S WRITINGS ON MOLLUSKS

1887-89. Contributions to the Mollusca of Florida. Proc. Davenport, Iowa Acad. 5: 45-72, 63*-72*.

1887. Record of a two day's dredging cruise in Tampa Bay, Florida. Conch. Exchange [Nautilus] 1: 44, 52, 53.

1887. Succinea lineata, W. G. B., in Nebraska. Conch. Exchange [Nautilus] 1: 65.

1887. New localities. Conch. Exchange [Nautilus] 1: 65.

1887. On the distribution of land and fresh-water shells in the tropics. Conch. Exchange [Nautilus] 2: 37, 38, 50, 51.

1887. On a new Floridian Natica. [Natica fordiana]. Conch. Exchange [Nautilus] 2: 51, 52.

1887. Shell collecting. Conch. Exchange [Nautilus] 2: 52, 53.

1887. The dredge. Conch Exchange [Nautilus] 2: 83, 84.

1888. Gundlachia ancyliiformis Pfr. in Florida. Conch. Exchange [Nautilus] 2: 96.

1888. Notes on some Indian Territory Shells. Proc. United States Natl. Mus. 11: 449-454.

1889. Genus making. Nautilus 3: 5-8.

1889. What is a species? Nautilus 3, 78-80, 88-90.

1891. Notes on Mr. Hemphill's Catalogue. Nautilus 4: 110.

1891. On the means of distribution of Unionidae in the South-eastern U. S. Nautilus 5: 15-17.

1892. Notes on Unionidae. Nautilus 5: 86-88.

1892. Collecting notes. Nautilus 6: 37-40.

1892. On a revision of the American Unionidae. Nautilus 6: 78-80.

1892. Notes on the Unionidae of Florida and the Southeastern States. Proc. United States Natl. Mus. 15: 405-436, 26 pls.

1893. On the relationships and distribution of the North American Unionidae, with notes on the west coast species. Amer. Naturalist 27: 353-358.

1893. A new Anodonta. [A. mearnsiana]. Nautilus 6: 134-135.

1893. Notes on the Unionidae. Nautilus 6: 143-144.

1893. A review of von Ihering's classification of the Unionidae and Mutelidae. Nautilus 7: 17-21.

1894. Types of Anodonta dejecta Lewis, rediscovered. Nautilus 8: 52-53.

1894. Patella (Helcioniscus) nigrisquamata Reeve. Nautilus 8: 91, 92.

1894. Notes on collecting shells in Jamaica. Nautilus 7: 110-113.

1894. On some fossil Unios and other shells from the drift at
Toronto, Canada: with a review of the distribution of
the Unionidae of northeastern North America. Proc. United
States Natl. Mus. 16: 591-595.

1895. Distribution of the land and freshwater mollusks of the
West Indian region, and their evidence with regard to past
changes of land and sea. Proc. United States Natl. Mus. 17:
423-450, 1 pl.

1895. On the validity of the genus Margaritana. Amer.
Naturalist 29: 336-344.

1895. Report on the invertebrates of the Maume River basin,
[in] Kirsch, P. H. Bull. U. S. Fish Comm. (1894) p. 332.

1895. Pleurocera subulare in water-mains. Nautilus 9: 37, 38.

1895. Note on Unio oregonensis Lea. Nautilus 8: 116-118.

1895. Unio ochraceus and cariosus. Nautilus 8: 121-123, 2
figs. (captions reversed).

1896. The mussel scars of Unios. Nautilus 10: 29-30.

1896. Review of: A study of the Unionidae of Arkansas...by
R. E. Call. Nautilus 10: 35-36.

1896. Notes on the parvus group of Unionidae and its allies.
Nautilus 10: 57-59.

1896. Unio mitchelli Simpson, [in] Dall, W. H., Diagnoses of New Mollusks from the survey of the Mexican Boundary. Proc. United States Natl. Mus. 18: 5-6.

1896. The classification and geographical distribution of the pearly fresh-water mussels. Proc. United States Natl. Mus. 18: 295-343, map.

1896. Description of four new Triassic Unios from the Staked Plains of Texas. Proc. United States Natl. Mus. 18: 381-385, figs.

1896. On the Mississippi Valley Unionidae found in the Saint Lawrence and Atlantic drainage areas. Amer. Naturalist 30: 379-384.

1897. The Ianthinias. Nautilus 10: 133-134.

1897. Helix dysoni. Nautilus 11: 13, 14.

1897. Notes on the classification of the Unios. Nautilus 11: 18-23.

1897. Notes upon Unio and Anodonta [in] Dall, W. H., Report on the Mollusks collected by the International Boundary Commission of the United States and Mexico, 1892-1894. Proc. United States Natl. Mus. 19: 370-374, pl. 32, figs. 1-5.

1899. The pearly fresh-water mussels of the United States; their habits, enemies, and diseases; with suggestions for their protection. Bull. United States Fish Comm. for 1900, pp. 279-288, 8 text figs.

1900. Review of: Unionidae of Indiana...by R. E. Call.
Nautilus 14: 95-96.

1900. Synopsis of the Naiades, or pearly fresh-water Mussels.
Proc. United States Natl. Mus. 22: 501-1044, pl. 18.

1900. New and unfigured Unionidae. Proc. Acad. Nat. Sci.
Phila. 52: 74-86, pls. 1-5.

1900. On the evidence of the Unionidae regarding the former
courses of the Tennessee and other southern rivers.
Science 12: 133-136.

1901. Alasmidonta marginata Say. Nautilus 15: 16-17.

1901. On the classification of the Unionidae. Nautilus 15:
77-82.

1901. The Mollusca of Porto Rico. Bull. United States Fish
Comm. for 1900, 1: 351-524, pls. 53-58, with W. H. Dall,
senior author.

— and Henderson, J. B. 1901. A new land operculate from
Haiti. [Ceratodiscus solutus]. Nautilus 15: 16, 17,
pl. 5.

1902. A new Naiad [Diplodon websteri] from New Zealand.
Nautilus 16: 30.

1905. A new locality for Cerion incanum. Nautilus 18: 137-138.

1906. [Drymaeus dormani and allied species in Manatee county,
Florida]. Nautilus 20: 24.

1914. A descriptive catalogue of the Naiades, or pearly fresh-water mussels. pp. xi, 1-1540. Bryant Walker, Detroit, Michigan.

1920. In lower Florida wilds. A naturalist's observations on the life, physical geography and geology of the more tropical part of the state. pp. 15, 404, 65 pls., 2 maps. New York.

1920. New Floridian subspecies of the genus Liguus. Proc. Biol. Soc. Washington 33: 121-126.

1921. Florida West Coast Liguus. Nautilus 35: 20-22.

1922. A search for Liguus. Nautilus 35: 65-73.

1923. An expedition that failed. Nautilus 36: 109-115.

1923. Out of doors in Florida. The adventures of a naturalist together with essays on the wild life and geology of the state. pp. 12, 412, 62, pls. Miami: E. B. Douglas Co.

1929. The Florida tree snails of the genus Liguus. Proc. United States Natl. Mus. 73 (20): 1-144, pls. 1-4.

RECENT AND FOSSIL TAXA OF THE SPECIES OF UNIONACEA AND

MUTELACEA INTRODUCED BY CHARLES T. SIMPSON

The following list contains all of the species of Unionacea and Mutelacea, recent and fossil, introduced by William T. Simpson. It does not contain the numerous higher catagories he contributed; these may be found in his major revisions (1900 and 1914). It is arranged alphabetically by species, giving the year and place of publication of the original description, the type locality, the location of the type, and the type number.

All locality data, contained in brackets, are additions to already published records, and are from original labels or modern atlases. The measurements of the types figured here are given on the plate captions and are not repeated elsewhere.

The following abbreviations have been used in this list:

ANSP -- Academy of Natural Sciences of Philadelphia, Pennsylvania

BMNH -- British Museum (Natural History)

MCZ -- Museum of Comparative Zoology, Cambridge, Massachusetts

MZUM -- Museum of Zoology, University of Michigan, Ann Arbor

PANSP -- Proceedings of the Academy of Natural Sciences of Philadelphia

PUSNM -- Proceedings of the United States National Museum, Washington, D.C.

USNM -- National Museum of Natural History, Washington, D. C.

australis Simpson, Lampsilis: 1900, PANSP 52: 75, pl. 2, fig.

2 (Little Patsaliga Creek [Crenshaw Co.], southeastern Alabama); 1900, PUSNM 22: 544; 1914, Cat. Naiades 1: 94. Holotype USNM 150473, also a single paratype.

avellana Simpson, Pleurobema

Plate 2, fig. 4

1900, PANSP 52: 81, pl. 2, figs. 6, 7 (Cahawba River, Alabama); 1900, PUSNM 22: 758; 1914, Cat. Naiades 2: 778. Figured holotype MZUM 79653.

brittsei Simpson, Lampsilis: 1900, PANSP 52: 76, pl. 5, figs. 1, 2 (no locality [Nianugua River, Camden Co., Missouri; Britts]). Holotype USNM 152700.

Changed to:

brittsei Simpson, Lampsilis breviculus: 1900, PUSNM 22: 533; 1914, Cat. Naiades 1: 58.

castanea Simpson, Quadrula

Plate 2, fig. 8

1914, Cat. Naiades 2: 877 (Tombigbee River, Moscow [Lamar Co.], Alabama; T. H. Aldrich]). Lectotype, here selected, USNM 159959.

clintonensis Simpson, Ptychobranchus: 1900, PANSP 52: 79, pl. 5, fig. 3 (Archies Fork of Little Red River, near Clinton [Van Buren Co.], Arkansas); 1900, PUSNM 22: 613; 1914, Cat. Naiades 1: 335. Holotype USNM 124615.

compressus Simpson, Lampsilis texensis Plate 1, fig. 5

1900, PUSNM 22: 564 (southwest Texas); 1914, Cat. Naiades 1: 150. The syntype marked by Morrison on 3/17/42 is here selected lectotype USNM 152059 from Las Moras Creek, Fort Clark, [Kinney Co.] Texas; E. A. Mearns.

deceptus Simpson, Diplodon fontainianus: 1914, Cat. Naiades 3: 1281 (Guahyba, Brazil) [not located].

delicata Simpson Truncilla sulcata Plate 1, fig. 1

1900, PUSNM 22: 520 (Detroit River, [Amherstburg, Essex Co., Ontario; B. Walker] Michigan [sic])); 1914, Cat. Naiades 1: 16. Measured holotype USNM 160853.

delicatus Simpson, Unio gibbosus Plate 1, fig. 3

1900, PUSNM 22: 704 (entire Mississippi drainage; St. Lawrence and its tributaries; Alabama River system; southeast into Florida; southwest to the Guadalupe River, Texas); 1914, Cat. Naiades 2: 600. Measured holotype USNM 128797 from St. Francis River, Greenway, Clay Co., Arkansas; F. B. Meek.

dockumenensis Simpson, Unio: 1896, PUSNM 18: 384, fig. 5

(SE corner of Garza Co.; windmill 3 mi. N Dockum; tank N Double Mountain River; head of Duck Creek; the three from Dickens Co., all Texas; Triassic). Figured holotype USNM [Paleontology].

dumblei Simpson, Unio: 1896, PUSNM 18: 383, fig. 3 (head of Duck Creek, 5 mi. NE Dockum, Dickens Co., Texas; Triassic). Figured holotype USNM [Paleontology].

elongata Simpson, Obovaria lens Plate 1, fig. 9
1914, Cat. Naiades 1: 294 (Ohio River). The syntype marked by Morrison on 12/2/41 is here selected lectotype USNM 35734 from Ohio River, Cincinnati [Hamilton Co.], Ohio; T. G. Lea in the Lea colln.

elongatus Simpson, Unio mitchelli Plate 2, fig. 5
1914, Cat. Naiades 1: 623 (Guadalupe River [near Kerrville], Kerr Co., Texas; [V. Bailey, 1902]). Lectotype, here selected, USNM 251917.

fallaciosus Simpson, Unio Plate 3, fig. 4
1914, Cat. Naiades 2: 715 ([Lake] Nicaragua; [R. Bridges from R. E. C. Stearns]). Measured holotype USNM 73062.

falsus Simpson, Glabaris Plate 3, fig. 7
1900, PUSNM 22: 932 (Yuruari River, a branch of the Orinoco River, Venezuela; [Stevens]); 1914, Cat. Naiades 3: 1456. Measured holotype USNM 86711.

flexuosa Simpson, Quadrula Plate 3, fig. 2
1900, PANSP 52: 83, pl. 2, fig. 8 (Holston River, Tennessee); 1900, PUSNM 22: 790; 1914, Cat. Naiades 2: 887. Type in the Frierson colln. MZUM [lost]. Is merely an old shell of Quadrula pilaris (Lea), teste Frierson, 1927, Check List North American Naiades, p. 57.

furva Simpson, Lampsilis subrostrata Plate 1, figs. 4, 6

1914, Cat. Naiades 1: 100 (North Indiana; Maumee River).

Lectotype, here selected, USNM 126921 from Lake at Warsaw, Kosciusko Co., Indiana; V. Storhi; allotype 126921a.

gibbus Simpson, Lampsilis ligamentinus: 1900, PUSNM 22: 540.

Based on Sowerby, 1868, Conch. Iconica 16, Unio, Pl. 95 species 520 as Unio crassus Say (Ohio River, southward).

Figured holotype BMNH 1907.10.28.262.

graciliratus Simpson, Unio: 1896, PUSNM 18: 384, fig. 4 (South of spur, headquarters 21, Dickens Co.; head of Duck Creek; both Dickens Co., Texas; Triassic). Figured holotype USNM [Paleontology].

grandis Simpson, Lampsilis higginsii: 1914, Cat. Naiades 1: 78 (Illinois River, near Utica [LaSalle Co.], Illinois).

Measured holotype, length 98; height 70; width 42mm; measured allotype, length 76; height 63; width 40 mm [neither located].

guatemalensis Simpson, Quadrula: 1900, PANSP 52: 83, pl. 2, fig. 4 (Rio Usuamasintae, Guatemala); 1900, PUSNM 22: 796; 1914, Cat. Naiades 2: 909. Known only from the figured holotype USNM 128991.

jickeli Simpson, Nodularia: 1900, PUSNM 22: 826. Based on Unio teretiusculus Jickeli 1874, Deutschen, Akad. Natur., Dresden 37: 276, pl. 11, fig. 3, non Philippi 1847. Location of the type not known.

leai Simpson, Diplodon

Plate 1, fig. 10

1900, PUSNM 22: 876 (Brazil; Lea colln.); 1914, Cat.

Naiades 3: 1241. Measured holotype USNM 85725.

leonensis 'B. H. Wright' Unio: 1892, PUSNM 15: 419, pl. 62, figs. 3, 4 (Lake Woodruff [Spring Garden Lake] near De Leon Springs [Volusia Co., Florida]). Figured holotype USNM 91141. Listed as a synonym of Unio jayensis Lea.

loomisi Simpson, Pseudodon: 1900, PANSP 52: 84, pl. 4, fig. 7 (Japan); 1900, PUSNM 22: 840; 1914, Cat. Naiades 3: 1101.

Known only from the figured holotype USNM 159212.

lurida Simpson, Lampsilis ventricosa: 1914, Cat. Naiades 1: 41 (throughout the St. Lawrence drainage). [not located] but specimens under this name USNM 29958, from Devil's Lake, Lehigh Co., Michigan.

magnalacustris Simpson, Quadrula coccinea: See under, paupercula Simpson, Quadrula coccinea.

mearnsi Simpson, Lampsilis: 1900, PANSP 52: 75, pl. 1, fig. 4 ([Las Moras Creek], vicinity of Fort Clarke [Kinney Co.], Texas); 1900, PUSNM 22: 564; 1914, Cat. Naiades 1: 151. Figured holotype USNM 151549; 4 paratypes MCZ 87962.

mearnsiana Simpson, Anodonta: 1893, Nautilus 6: 134 (San Bernardino Ranch, Mexican Boundary Line, Arizona). Is Anodonta dejecta Lewis, teste Simpson, 1896, PUSNM 19: 372. Holotype USNM 610313.

minor Simpson, Quadrula kirtlandiana

Plate 3, fig. 5

1900, PUSNM 22: 791 (Tennessee Drainage); 1914, Cat.

Naiades 2: 892. Lectotype, here selected, USNM 150155

from Clinch River, Scott Co., Virginia; Van Hyning.

minus Simpson, Diplodon: 1914, Cat. Naiades 3: 1249 (Iguape, Brazil). Holotype USNM 162425, figured by Marshall, 1917, PUSNM 53: 383, pl. 51, figs. 3-6.

mitchelli Simpson, Unio: 1895 [in] Dall, PUSNM 18: 5 (Guadalupe River, Victoria Co., Texas; Rio Salado near New [Nuevo] Leon [state] Mexico); 1896, PUSNM 19: 371, pl. 32, figs. 1-3. Figured holotype USNM 128364 from the former locality.

nasuta Simpson, Quadrula chunii

1914, Cat. Naiades 2: 877 (Mississippi; west to Central Texas north to Arkansas) [not located].

nigrescens Simpson, Lampsilis ligamentinus Pl. 1, fig. 2

1914, Cat. Naiades 1: 82 (Allegheny Co., Pennsylvania;

Mississippi River, Lee Co., Iowa; Kankakee River, Illinois). Lectotype, here selected, USNM 150410 from the last locality.

nux Simpson, Obovaria

Plate 1, fig. 11

1914, Cat. Naiades 1: 297 (Tombigbee River; Moscow [Lamar Co.], Alabama; Wright; Cannisaria [Cannisnia] Lake [De Soto Parish], Louisiana). Measured holotype USNM 152968 from the former locality.

obesa Simpson, Tritogonia tuberculata

Plate 1, fig. 13

1900, PUSNM 22: 609 (Big Eddy, Neches River [Henderson Co.], Texas; Singby); 1914, Cat. Naiades 1: 320. Lectotype, here selected, USNM 125669.

pallidescens, Simpson, Anodontites trigonus

Plate 3, fig. 9

1914, Cat. Naiades 3: 1442 ([Amazon River, Brazil]; I. Lea colln.). Known only from the holotype USNM 86731.

pannosa Simpson, Pleurobema: 1900, PANSP 52: 82 (White River and Hot Springs [Ouachita River drainage, Garland Co.], Arkansas); 1900, PUSNM 22: 763; 1914, Simpson, Cat. Naiades 2: 799 type locality as the latter, measured type [not located].

parva Simpson, Obovaria lens

Plate 1, fig. 8

1914, Cat. Naiades 1: 294 (Maumee River [Ohio]; Wabash River [Indiana]; [Lake Erie] Sandusky [Sandusky Co.], Ohio; Tennessee). Restricted to the northern form by Morrison, 1942, Bull. Bureau Amer. Ethnol. 129: 360). Measured syntype here selected lectotype, USNM 150457 from Duck River, Tennessee, J. H. Ferriss.

patsaligensis Simpson, Pleurobema: 1900, PANSP 52: 82, pl. 2,
fig. 1; 1900, PUSNM 22: 761; 1914, Cat. Naiades 2: 788
(Little Patsaliga Creek [Crenshaw Co.], Alabama). Holotype
USNM 150475.

paupercula Simpson, Quadrula coccinea Plate 3, fig. 1
1900, PUSNM 22: 789 (the St. Lawrence and its tributaries
near the Niagara Falls). Measured syntype here selected
lectotype USNM 134834 from Niagara River, 3 mi. above
Niagara Falls, [Niagara Co., New York]; P. Bartsch.
Non Unio paupercula Lea 1861 changed by Simpson, 1914,
Cat. Naiades 2: 884 to Quadrula coccinea magnalacustris.

peninsularis Simpson, Trapezoideus: 1900, PUSNM 22: 859.
Based on Sowerby, 1865, Conch. Iconica 16, Unio, pl. 28,
species 142 (Sumatra). Holotype BMNH 1964159.

perplexus Simpson, Diplodon: 1914, Cat. Naiades 3: 1248 (Lake
Portrero near Maldonado, Uruguay). Holotype USNM 150389
figured by Marshall, 1917, PUSNM 53: 384, pl. 53, figs. 1-4.

profunda Simpson, Quadrula Plate 3, fig. 6
1914, Cat. Naiades 2: 907 (Usumacinta River, Guatemala;
H. von Ihering). Known only from the holotype USNM 128987,
consists of a single valve.

pusilla Simpson, Cyprogenia irrorata Plate 2, fig. 2
1900, PUSNM 22: 610 (Green River [Mammoth Cave, Edmonson

Co.], Kentucky); 1914, Cat. Naiades 1: 328. Measured syntype here selected lectotype USNM 152004.

pusilla Simpson, Quadrula granifera: 1900, PUSNM 22: 795 (Green River at Mammoth Cave [Edmonson Co.], Kentucky); 1914, Cat. Naiades 2: 906. Lectotype MCZ 20176 selected by Johnson, 1956, Bull. Mus. Comp. Zool. 115: 131, pl. 2, fig. 4; paralectotype USNM 152047.

quadrata Simpson, Quadrula Plate 3, fig. 8
1914, Cat. Naiades 2: 911 (Usumacinta River, Guatemala; H. von Ihering). Measured syntype here selected lectotype USNM 128996.

radiata Simpson, Cristaria: 1900, PUSNM 22: 586, based on Heude, 1881, Conch. Fluv. Nanking, no. 7, pl. 52, fig. 96 (les ruisseaux du Kien-te sud, Ngan-houe). Figured type in the Musée Heude.

reticulatus Simpson, Nephronaias: 1900, PANSP 52: 77, pl. 2, fig. 3 (Patook River, Honduras); 1900, PUSNM 22: 595; 1914, Cat. Naiades 1: 269. Holotype USNM 152964.

rhomboidea Simpson, Pleurobema fassinans Plate 2, fig. 6
1900, PUSNM 22: 762 (Clinch River, Western Virginia; Sword); 1914, Cat. Naiades 2: 798 (Upper waters of the Clinch River, Virginia). Lectotype, here selected, USNM 133331.

rhomboidea Simpson, Quadrula radulosa Plate 3, fig. 10

1900, PUSNM 22: 803 (Borneo; Chaper); 1914, Cat. Naiades 2: 938 (Selrocany, Borneo). Known only from the measured holotype USNM 126472a.

rudis Simpson, Quadrula: 1900, PANSP 52: 82, pl. 3, fig. 2

(Rio Taxtunilha [Tributary of the Rio de la Pasion], Guatemala); 1914, Cat. Naiades 2: 910. Known only from the holotype USNM 84210 in the Lea colln. from Wheatley labeled, Unio psoriacus Morelet.

salinasensis Simpson, Lampsilis: 1908 [in] Dall, PUSNM 35: 181,

pl. 30, fig. 3 (Salinas River, Coahuila [State], Nelson and Goldman; Valles River, Valles [San Louis Potosi State], Mexico). Figured holotype USNM 163156, from the former locality. Is Lampsilis fimbriata Frierson, teste Simpson, 1914, Cat. Naiades 1: 178.

santamariae Simpson, Diplodon: 1914, Cat. Naiades 3: 1270

(Brazil?). Holotype USNM 162383 from Rio Itapoca, Brazil, figured by Marshall, 1917, PUSNM 53: 386, pl. 55, figs. 1-4.

semigranosus Simpson, Diplodon: 1914, Cat. Naiades 3: 1252

(São Paulo River; Ponte Grande; Os Perus, Brazil). Holotype USNM 128790 Rio Tiete, São Paulo, Brazil, figured by Marshall, 1917, PUSNM 53: 387, pl. 55, figs. 5-8.

spinosus Simpson, Shistodesmus: 1900, PUSNM 22: 804. Based on Heude, 1883, Conch. Fluv. Nanking no. 8, pl. 59, fig. 115 (la rivière de Ning-kouo fou, celle de T'sing-yang hien Ngan-houé). Figured type in the Musée Heude.

subelliptica Simpson, Pleurobema brevis: Plate 2, fig. 7 1900, PANSP 52: 80 (Spring River, Hardy [Fulton Co.], Arkansas; Tennessee drainage, probably); 1900, PUSNM 22: 763. Lectotype, here selected, USNM 159952 from the former locality.

Changed to:

subellipticum Simpson, Pleurobema brevis: 1914, Cat. Naiades 2: 801.

subluridus Simpson, Unio: 1892, PUSNM 15: 432, pl. 73, figs. 3, 4 (Orange Springs, Volusia [Marion Co.], Florida); 1900, PUSNM 22: 743; 1914, Cat. Naiades 2: 630. Figured holotype USNM 104002.

subplantus Simpson, Unio: 1896, PUSNM 18: 36, figs. 1, 2 (Duck Creek, Dickens Co., Texas; Triassic). Figured holotype USNM [Paleontology].

suppositus Simpson, Diplodon: 1914, Cat. Naiades 3: 1245 (southern Brazil, numerous localities). Holotype USNM 162374, Parana Brazil, figured by Marshall, 1917, PUSNM 53: 385, pl. 54, figs. 1-4; paratype USNM 128824 Rio Tiete, São Paulo, Brazil, figured by Marshall, Ibid. pl. 51, fig. 2.

tenerus 'Ravenel' Simpson, Unio: 1892, PUSNM 15: 416, pl. 58, figs. 5, 9 (South Carolina). Figured syntype USNM 85030, male [Savannah River, Georgia]; figured syntype USNM 85032, female. Is Lampsilis vaughaniana (Lea) teste Simpson, 1914, Cat. Naiades 1: 110.

trivialis Simpson, Diplodon: 1914, Cat. Naiades 3: 1250 (Taboticabal, São Paulo, Brazil). Holotype USNM 162409 figured by Marshall, 1917, PUSNM 53: 386, pl. 54, figs. 5-8.

umbonatus Simpson, Glabaris: 1900, PUSNM 22: 926. Based on Anodon ciconia Sowerby (partim), 1870, Conch. Iconica 17, Anodon, pl. 29, species 115, fig. b (no locality). Figured type BMNH [lost].

websteri Simpson, Diplodon: 1902, Nautilus 16: 30 (Waiuku, New Zealand). The type figured by Dall, 1908, PUSNM 35: 181, pl. 30, figs. 1, 2; refigured by McMichael and Hiscock, 1958, Australian Jour. Mar. F. W. Res. 9: 476, pl. 15, figs. 5-9, was selected as lectotype USNM 162342.

wrightii Simpson, Quadrula: 1914, Cat. Naiades 1: 868 (Pine Barren Creek, Escambia Co., Florida ([not located]).

MISCELLANEOUS UNIONID TYPES IN THE NATIONAL MUSEUM OF

NATURAL HISTORY

The more important assemblages of unionid types in the National Museum of Natural History have been previously published upon. All of the nominal species, recent and fossil, of unionids introduced by Heude, Lea, Marshall, Simpson and B. H. and S. H. Wright have been listed and their extant types located. The National Museum includes the largest collection of paratypes of the Asian unionids, mostly from the People's Republic of China, described by P. M. Heude in any western museum (Johnson, 1973a). It contains the majority of the figured types of the 851 nominal species introduced by Isaac Lea (Johnson, 1974a); all of those introduced by William B. Marshall (Johnson, 1974b), and most of those described by B. H. and S. H. Wright (Johnson, 1967). References to the Wrights' types are included here separately, beginning on page 38. The present study on Charles T. Simpson leaves to be listed only some miscellaneous types of the following authors:

Baker, F. C.; Bartsch; Call; Conrad; Dall; DeKay;
Frierson; Goodrich; Gould; Gray, A.F.; Hemphill;
Ihering; Johnson, R.I.; Krauss; Lamarck; Lewis;
Marsh; Morelet; Morrison, who also selected neotypes
for Dillwyn and Gmelin; Rolle; Smith, H.M.; Von dem Busch;
Walker; Ward; and Wheeler.

Among these authors, all of the few unionids described by Bartsch (Ruhoff, 1973), Dall (Boss, et al., 1968) and Morrison are in the National Museum. F. C. Baker's types were studied by Franzen (1956, 57, 58); Call's by Johnson (1975a); Conrad's by Johnson (1973b); Gould's by Johnson (1964); A. F. Gray's by Johnson (1956); Goodrich's by Rosewater (1959); Lamarck's by Johnson (1969) and Marsh's by Johnson (1975b). Included are several references to types which should be in the National Museum but were not located. Not included are a number of specimens listed as types, mainly from Conrad, which are not types. A few of these appeared in mimeographed lists which were circulated among collectors. The previously unfigured type of Unio ferussacianus Lea is also figured here.

The following list is arranged alphabetically by species, giving the year and place of publication of the original description, the type locality, the publication in which the species was first illustrated, the location and number of the type when known, including references to paratypes when they are the only material in the National Museum.

All locality data, contained in brackets, are additions to already published records and are from original labels or modern atlases. A few of the species are illustrated here for the first time. The measurements of the types figured here are given on the plate captions and are not repeated elsewhere.

The following abbreviations have been used in this list:

ANSP -- Academy of Natural Sciences of Philadelphia,

Pennsylvania

BMNH -- British Museum (Natural History)

MCZ -- Museum of Comparative Zoology, Cambridge,

Massachusetts

MZUM -- Museum of Zoology, University of Michigan,

Ann Arbor

PUSNM -- Proceedings of the United States National Museum,

Washington, D. C.

USNM -- National Museum of Natural History, Washington, D.C.

TYPES OF UNIONACEA AND MUTELACEA IN THE NATIONAL MUSEUM OF

NATURAL HISTORY NOT STUDIED ELSEWHERE

aldrichianum Goodrich, Pleurobema: 1931, Occ. Papers Mus. Zool., Univ. Michigan, no. 229, p. 2, pl. 1 (Conasauga River, near Conasauga, Polk Co., Tennessee). Holotype Alabama Mus. Nat. Hist. 83; paratype USNM 382459.

amazonia Frierson, Hyria: 1914, PUSNM 47: 363, pl. 12 (Amazon River). Holotype USNM 83877 refigured by Johnson, 1972 Occ. Papers on Moll. 3: 141, pl. 32, fig. 3.

amphichaenus Frierson, Unio (Lampsilis): 1898, Nautilus 11: 109, pl. 1 (Sabine River, Logansport [De Soto Parish], Louisiana). Holotype USNM 159935 refigured by Johnson, 1972, Occ. Papers on Moll. 3: 141, pl. 27, fig. 1.

1942, Bull. Bur. American Ethnol. 129: 356 ([Tennessee River], Tuscumbia [Colbert Co.], Alabama; Pybas, in the Lea colln.). Holotype USNM 84221.

borealis Gray, Unio: 1882. Trans. Ottawa Field Nat. Club (3): 53, 3 figs. (Ottawa River at Duck Island; Leamy's Lake, near Hull, Quebec, Canada). Lectotype MCZ 51470 selected by Johnson, 1956, Bull. Mus. Comp. Zool. 115: 108; paralectotype USNM 85463; both from the former locality.

bracteatus Gould, Unio: 1855, Proc. Boston Soc. Nat. Hist. 5: 228 (Llanos River, Upper Texas). Lectotype USNM 84966 selected by Johnson, 1964, USNM Bull. no. 239, p. 47, pl. 31, fig. 5.

breviculus Call, Unio: 1887, PUSNM 10: 499, pl. 28 (Currant River, Shannon Co., Missouri, and in Jacks Fork and Big Creek, tributaries to it). Lectotype MCZ 5020 from Jacks Fork selected by Johnson, 1975, Occ. Papers on Moll. 4: 141; figured allotype MCZ 5023 from Big Creek; paralectotype USNM 75479 from Shannon Co.

burkei Walker, Quincuncina: 1922, Nautilus 36: 3, pl. 1, figs. 1, 4 (Sikes Creek, a tributary of the Choctawatchee River, Barbour Co., Alabama [a number of other localities from the same river system are also listed]). Holotype MZUM 94496 formerly Walker colln. no. 41626; paratype USNM 347206.

chipolaensis Walker, Unio: 1905, Nautilus 18: 135, pl. 9, figs. 6, 7 (Chipola River, Florida, restricted to Chipola River, 1 mi. N Marianna, Jackson Co., Florida by Clench and Turner, 1956, Bull. Florida State Mus. 1: 176). Holotype MZUM 96363; paratype USNM 217569.

cognata Gould, Anodon [ta]: 1850, Proc. Boston Soc. Nat. Hist. 3: 249 (Nisqually [near present site of Tacoma] and near Fort Vancouver [Washington]); 1852, U. S. Expl. Exped. 12: 435, pl. 38, fig. 546, a-b. Figured holotype USNM 5930 from Oregon.

coruscus Gould, Unio: 1856, Proc. Boston Soc. Nat. Hist. 6: 15 (River St. Johns, near Lake Beresford, Florida). Measured holotype MCZ 169097 figured by Frierson, 1911, Nautilus 25, pl. 1, figs. 1-3, refigured by Johnson, USNM Bull. no. 239, p. 60, pl. 32, fig. 3; paratypes USNM 85239 and 611262.

dejecta Lewis, Anodonta: 1875, Field and Forest [for Aug. and Sept.] (2,3), p. 26 (Arkansas River, or its tributaries W of 100th meridian). Lectotype, here selected, USNM 30721 figured by Simpson, 1896, PUSNM 19: 372, pl. 32, figs. 4, 5, who noted that the locality was in error, the species being confined to the Pacific drainage.

deviatus 'Anthony' Reeve, Unio: 1864, Conch. Iconica 16, Unio, pl. 15, species 61 (North America). Holotype BMNH 1965210 with Anthony's original label to H. Cuming, "Tennessee, very rare, best I have." Specimen from Anthony USNM 84942.

dorsuosus Gould, Unio: 1850, Proc. Boston Soc. Nat. Hist. 3: 296 (Eastern Asia?); 1852, U. S. Exp. Exped. 12: 430, pl. 37, fig. 540, a-b (marked Feejee [Fiji] Islands); 1856 Ibid. Addenda and Corrigenda, p. 508, "Is Unio nepeanensis Conrad." Figured holotype USNM 5925 refigured by McMichael and Hiscock, 1958, Australian Jour. Marine and F. W. Res. 9: 441, pl. 9, figs. 16-18 and the type locality restricted to Nepean River, New South Wales, Australia.

excelsens Gould, Unio: 1853, Proc. Boston Soc. Nat. Hist. 1: 141 ([Tavoy] British Burmah [Burma]). Lectotype USNM 85473 selected by Johnson, 1964, USNM Bull. no. 239, p. 73, pl. 33, fig. 2; paratypes USNM 611831.

falcata Gould, Alasmodon: 1850, Proc. Boston Soc. Nat. Hist. 3: 294 (Walla Walla, Oregon [Washington]; Sacramento River, California); 1852, U. S. Exp. Exped. 12: 443, pl. 38, fig. 545, a, b. Figured holotype USNM 5929 [sic] 5930, localities not separated.

fallaciosus Smith, Lampsilis: 1899, Bull. U. S. Fish. Comm. p. 291, pl. 79 [no description]. Holotype USNM 30023a, [Ohio River, Sedamsville, Hamilton Co., Ohio]; refigured by Simpson, 1900, PANSP 52: 74, pl. 2, fig. 5.

famelicus Gould, Unio: 1850, Proc. Boston Soc. Nat. Hist. 3: 294 (Walla Walla, Oregon [Washington]); 1852, U. S. Exp. Exped. 12: 432, fig. 544, a, b. Figured holotype USNM 5929.

feminalis Gould, Anodon [ta]: 1850, Proc. Boston Soc. Nat. Hist. 3: 293 (Oregon); 1852, U. S. Expl. Exped. 12: 436, pl. 38, fig. 547, a-b (Walla Walla, Columbia River, Oregon [Washington]). Figured holotype USNM 5932.

ferussacianus Lea, Unio Plate 1, fig. 13
1868, JANS (2) 6: 266 [foot note] (Baghdad [Iraq]);
1869, Obs. 12: 15. Known only from the holotype USNM 85182.

fimbriata Frierson, Lampsilis: 1907, Nautilus 21: 86, pl. 12, two upper figs. and lower left one (Valles River [near Valles, San Luis Potosi State, Mexico]). Holotype MZUM 87579 refigured by Johnson, 1972, Occ. Papers on Moll. 3: 144, pl. 27, fig. 2; paratype USNM 207440.

flucki Morrison, Diplodon: 1943, Nautilus 57: 14, pl. 5, figs. 5-9 (Orinoco River above Munduapo, Venezuela). Holotype USNM 521998.

flucki Bartsch, Nephronaias: 1906, PUSNM 30: 393, pls. 27-29 (Wounta River, NW of Kukallaya, Nicaragua). Holotype USNM 186121.

fluviatilis Gmelin, Mytilus: 1791, Syst. Naturae, 13th edit., p. 3359, refers to Lister, 1686, Hist. Conch. pl. 157, fig. 12 (Virginia). Neotype USNM 709986 from the lower Appomattox River of the James River System, near Hopewell, Virginia, selected by Morrison, 1975, Bull. Amer. Mal. Union for 1974, p. 39, figs. 1-4.

foliacea Gould, Unio: 1843, Proc. Boston Soc. Nat. Hist. 1: 141 ([Tavoy] British Burmah [Burma]). Lectotype USNM 84161 selected by Johnson, 1964, USNM Bull. no. 239, p. 78, pl. 33, fig. 3.

fucatus Dillwyn, Mytilus: 1817, Descriptive Catalogue of Recent shells 1: 317, refers to Lister, 1686, Hist. Conch., pl. 154, fig. 9 (Virginia). Neotype USNM 709985 from the lower Appomattox River of the James River System, near Hopewell, Virginia, selected by Morrison, 1975, Bull. Amer. Mal. Union for 1974, p. 38, figs. 5-8.

glauca Gould, Anodon [ta]: 1850, Proc. Boston Soc. Nat. Hist. 3: 293 (Peru); 1852, U. S. Exp. Exped. 12: 434, pl. 38, fig. 548, a, b. Non Lamarck 1819, changed to Anodonta puberula Gould, 1862, Otia Conch. p. 86. Figured holotype USNM 5933.

globula Morrison, Obovaria subrotunda Plate 1, fig. 7 1942, Bull. Bureau American Ethnol. 129: 360 ([Tennessee River], Tuscumbia [Colbert Co.], Alabama; Thornton, in Lea colln.) Holotype USNM 85789.

goliath Rolle, Hyriopsis: 1904, Nach. Deutschen Mal. Gesell. 36: 25, pls. 1-2 (Rivière Claire, Tonkin [Viet Nam]). Location of figured type not known; paratype USNM 187459.

greenii Conrad, Unio: 1834, New Fresh Water Shells U. S., p. 32, pl. 4, fig. 1 (headwater of the Black Warrior River, Alabama); 1837, Monography Unionidae North America, no. 8, p. 69, pl. 38, fig. 2. Figured type ANSP 20413 [lost]; syntype ANSP 41136 from Conrad; syntype USNM 84950 from the ANSP.

hagleri Frierson, Unio (Pleurobema): 1900, Nautilus 13: 109, pl. 2 (North River near Tynes [=Tyner, Tuscaloosa Co.], Alabama). Lectotype ANSP 77902a selected by Johnson, 1972, Occ. Papers on Moll. 3: 114, pl. 25, fig. 1; paralectotype USNM 159508.

haroldiana Dall, Sonidea angulata: 1908, Smithsonian Misc. collns. 50: 500 (Guadalupe Creek, between San Jose and San Francisco Bay, California). Holotype USNM 110596a.

horda Gould, Anodon [ta] Plate 2, fig. 1 1855, Proc. Boston Soc. Nat. Hist. 5: 229 (Comanche Creek [Tributary of the Llano River, close to the present site of Mason, Mason Co.], Texas [teste, Taylor, 1967, Veliger 10: 153]). Measured holotype USNM 678301. Johnson, 1964, USNM Bull. no. 239, p. 88, selected a lectotype for this species before the type was located; it is now invalid.

housatonica Linsley, Anodonta: 1845, American Jour. Sci. (1) 48: 277 (Housatonic [River] Corum [near Huntington, Fairfield Co.], Connecticut [nomen nudum]; Gould, 1848, American Jour. Sci. (2) 6: 234, figs. 4, 6. Measured and figured holotype USNM 678302 refigured by Johnson, 1970, Bull. Mus. Comp. Zool. 140: 361, pl. 16, fig. 1.

huapensis Bartsch, Diplodon: 1906, PUSNM 30: 393, pls. 27-29 (small lake on Victoria Island, in Lake Nahuel Huapé, Argentina). Holotype USNM 186117.

idahoensis Hemphill, Anodonta: 1891, Zoe 1: 328, pl. 10, figs. 3, 4 (Spokane River, above Post Falls [Kootenai Co.], Idaho). Possible figured and measured holotype USNM 105602.

inoscularis Gould, Anodon [ta]: 1843, Proc. Boston Soc. Nat. Hist. 1: 160 (Salwe[e]n River, British Burmah [Burma]). Lectotype USNM 86352 selected by Johnson, 1964, USNM Bull. no. 239, p. 92, pl. 32, fig. 1.

lewisii Walker, Truncilla: 1910, Nautilus 24, pl. 3, figs. 3, 4, 5 (Holston River, Tennessee; also Clinch River, Tennessee, Cumberland River, Port Burnside [Pulaski Co.], Kentucky; Holston River, Knox Co., Tennessee). Figured syntypes MZUM 91456. USNM 84051 is from Troost and is not a type.

lutulentus Gould, Unio: 1850, Proc. Boston Soc. Nat. Hist. 3: 295 (New Zealand); 1852, U. S. Exp. Exped. 12: 428, pl. 37, fig. 542, a-c. Figured holotype USNM 5927 refigured by McMichael and Hiscock, 1958, Australian Jour. Marine and F. W. Res. 9: 426, pl. 14, figs. 4-7. The type was confirmed as lectotype and the type locality restricted to Bay of Islands, New Zealand.

mcmichaeli Clench and Turner, Elliptio: 1956, Bull. Florida State Mus. 1: 170, pl. 7, figs. 1-2 (Choctawhatchee River, 8 mi W Miller Cross Roads, Holmes Co., Florida, on Florida State Route 2). Holotype MCZ 191922; paratype USNM 710723 from MCZ 191827.

nehringi Ihering, Castalina: 1891, Zool. Anz. 14: 477 (Rio Piracicaba, São Paulo, Brazil); 1893, Archiv für Nat., p. 75, pl. 3, fig. 4. Holotype presumed to be in the Museo Paulista; paratype USNM 125730.

orbis Morrison, Actinonaias carinata Plate 1, fig. 3 1942, Bull. Bureau American Ethnol. 129: 361 ([Tennessee River], Florence [Lauderdale Co.], Alabama; G. White in Lea colln.). Holotype USNM 84998.

orinocensis Morrison, Castalia: 1943, Nautilus 57: 14, pl. 5, figs. 1-4 (Orinoco River, Maipires, Colombia). Holotype USNM 522000.

ortmanni Walker, Mycromya: 1925, Occ. Papers Mus. Zool., Univ.

Mich. no. 163, pp. 1-4, pl. 1, figs. 1-6 (Green River, Mam-
mouth Cave [Edmonson Co.], Kentucky). Holotype MCZ 168805;
allotype MCZ 167703; paratypes USNM 152010 and 160825.

ozarkensis Call, Unio: 1887, PUSNM 10: 498, pl. 27 (Currant
River, Shannon Co., Missouri, and in Jacks Fork and Big
Creek, tributaries to it). Figured holotype MCZ 5707,
figured allotype MCZ 5705, both from Jacks Fork; para-
type USNM 75480 from Shannon Co.

panacoensis Von dem busch, Unio: 1843 [in] Philippi, Abbild. und
Beschr. Conch. 1: 75, pl. 2 (Flumea Panaco propre Tampico,
[Tamaulipas State] Mexico). Location of figured type
not known; paratype USNM 85340.

papyrus Gould, Unio: 1845, Proc. Boston Soc. Nat. Hist. 2:
53 (Everglades of Florida). Lectotype USNM 86125 selected
by Johnson, 1964, USNM Bull. no. 239, p. 122, pl. 31, fig. 2.

peggyae Johnson, Anodonta: 1956, Breviora, Mus. Comp. Zool., no.
213, pl. 2, figs. 1-3 (Lake Talquin [formed by a dam on the
Ochlockonee River], Leon Co. public fishing ground, Leon
Co., Florida). Holotype MCZ 25140; paratype USNM 709290.

pentagonoides Frierson, Quadrula trapezoides: 1902, Nautilus
16: 39 (Lake Charles, a shallow expansion of the Calcasieu
River [N Lake Charles, Calcasia Parish], Louisiana). Lecto-
type ANSP 128928 selected by Johnson, 1972, Occ. Papers on
Moll. 3: 147, pl. 26, fig. 8: paralectotype USNM 533689.

pepinensis F. C. Baker, Lampsilis siliquoidea: 1927, American Mid. Nat. 10: 223 (Lake Pepin, near Lake City [Wabasha Co.], Minnesota); 1928, Bull. Univ. Wisconsin no. 1527, p. 275, pl. 90, figs. 2-5. Lectotype MZUM 209208 selected by Franzen, 1957, Nautilus 71, p. 34, Baker's figs. 4-5, formerly Univ. of Wisconsin 355 p.; paralectotype USNM 85009.

pictus Lea, Unio: In addition to the syntype of this species mentioned by Johnson (1974a, p. 112) is one in the MCZ no. 5792 mentioned incorrectly by Johnson (1956: 128) as the holotype, but which is slightly smaller than the figured type.

pleasii Marsh, Unio: 1891, Nautilus 5: 2 (Little Red River, Arkansas. Lectotype ANSP 56480a selected by Johnson and Baker, 1973, PANSP 125, pl. 9, fig. 5; paralectotype USNM 124641.

popenoi Call, Unio: 1885, Bull. Washburn College, Lab. Nat. Hist. 1: 49, pl. 2 (Fall River, Wilson Co.; Verdigris River; both Kansas). Holotype MCZ 4934; paratype USNM 74115; both from the former locality.

profugus Gould, Unio: 1850, Proc. Boston Soc. Nat. Hist. 3: 295 (Hunter's River, New South Wales [Australia]); 1852, U. S. Exp. Exped. 12: 429, pl. 38, fig. 543, a, b. Single valve of figured holotype USNM 5928, refigured by McMichael and Hiscock, 1958, Australian Jour. Marine and F. W. Res. 9: 421, pl. 7, figs. 1, 2.

psoricus Morelet, Unio: 1851, Testacea Novissima 2: 25 (flumen Usumacinta [Peten Province], Guatemala). Measured holotype BMNH 93.2.4.203, figured by Fischer and Crosse, 1894, Miss. Sci. au Mexique, pt. 7, 2: 572, pl. 61, fig. 3; paratype USNM 84210.

puberula Gould, Anodonta: See under: glauca Gould, Anodon [ta].

ribidula Frierson, Quadrula: 1905, Nautilus 19: 14, pl. 1, figs. 3, 4 (Mulberry River, also Black Warrior River and North River [Tyner, Tuscaloosa Co.], Alabama). Holotype MZUM 113535 refigured by Johnson, 1972, Occ. Papers on Moll. 3: 148, pl. 25, fig. 3 from the third locality; topotype USNM 348993 from Black Warrior River, Alabama from the Alabama Mus. Nat. Hist.

rosaceus DeKay, Unio: 1843, Zool. New York, Moll. pt. 5, p. 192, pl. 39, figs. 355, 356, pl. 40, fig. 357 (Seneca Lake [North Western] New York). Lectotype USNM 678303 selected by Johnson, 1970, Bull. Mus. Comp. Zool. 140: 391, specimen figured on pl. 39, fig. 456; paralectotype USNM 678304; both from the New York State Museum.

rotundata Lamarck, Unio: 1819, An. sans Vert. 6: 75, no. 24 (Habite....restricted to Bayou Teche, St. Mary Parish, Louisiana, by Clench and Turner, 1956, Bull. Florida State Mus. 1: 192). Measured holotype USNM 85760, figured by Johnson, 1969, Nautilus 83: 60, fig. 10. See also under: suborbiculata Lamarck, Unio.

sayii Ward, Unio: [in] Tappan, 1839, American Jour. Sci. 35: 268, pl. 3, fig. 1 (Walnut Creek and Ohio Canal, near Circleville [Pickaway Co.], Ohio. Possible syntype USNM 85356 from Scioto River.

selecta Wheeler, Fusconaia: 1914, Nautilus 28: 76, pl. 4 (Cache River, Nemo, Craighead Co., Arkansas). Type in the Wheeler colln.; paratype USNM 272249.

sinuosum Morrison, Guianadesma: 1943, Nautilus 57: 46, pl. 8 (Cuyuni River, opposite Kartabo Point, near its junction with the Mazaruni River, Essequibo District, British Guiana). Holotype USNM 536901.

suborbiculata Lamarck, Unio: 1819, An. sans Vert. 6: 81, no. 48 (Habite ...les eaux douces des climats chauds? Restricted to Bayou Teche, St. Mary Parish, Louisiana, by Clench and Turner, 1956, Bull. Florida State Mus. 1: 192). Measured holotype USNM 85760 consists of a polished right valve. Lea (1834, Trans. Amer. Philos. Soc. 1: 189; Obs. Unio 1: 201) was presented this specimen by Féruccac who believed it to be the individual cited by Lamarck. Féruccac (1835, Mag. de Zool. 5, cl. 5, nos. 59, 60, p. 31, note 10) pointed out that Lamarck based his description of U. rotundata and suborbiculata on the same specimen at two different times. Figured by Johnson, 1969, Nautilus 83: 60, fig. 10.

sulcata Krauss, Castalia: 1853, Zeit für Malak. 5: 99 (in flumini Marowini, colonia Surinamensi). Possible syntype USNM 84379 from Dunker in the Lea colln.

superiorensis Marsh, Unio: 1897, Nautilus 10: 103, pl. 1, figs. 1, 2, 5 (Michipicoton River, upper shore of Lake Superior, Canada). Figured holotype ANSP 70449a; paratype ANSP 70449, fig. 5; paratype USNM 133386.

tavoyensis Gould, Unio: 1843, Proc. Boston Soc. Nat. Hist. 1: 140 ([Tavoy], British Burmah [Burma]). Measured holotype MCZ 169389 figured by Johnson, 1964 USNM Bull. no. 239, p. 156, pl. 32, fig. 4; paratypes USNM 84071.

tigris 'Férussac' Lea, Unio: 1870, Synopsis Unionidae, 4th edit., p. 39 [nomen nudum]. "A specimen in the Lea colln. USNM 84706 which is no doubt authentic, is apparently a delicate young Unio tigris Bourguignat, Asia Minor," teste Simpson, 1900, PUSNM 22: 688.

vereundus Gould, Unio: 1850, Proc. Boston Soc. Nat. Hist. 3: 295 (Manila [Philippine Islands]); 1852, U. S. Exp. Exped. 12: 431, pl. 37, fig. 541, a-c. Figured holotype USNM 5926

walkeri Wilson and Clark, Truncilla: 1914, U. S. Bur. Fisheries Doc. 781: 46, pl. 1, fig. 1 (East Fork of Stones River, near Walterville [Walterhill, Rutherford Co., Tennessee]). Figured syntypes [not located].

TYPES OF UNIONACEA IN THE NATIONAL MUSEUM OF NATURAL HISTORY

DESCRIBED BY BERLIN HART AND SAMUEL HART WRIGHT

armathwaitensis B. H. Wright, Unio gibbosus: 1898, Nautilus 11: 123 (a branch of the South Fork of the Cumberland River, Armathwaite, Fentress Co., Tennessee). Lectotype USNM 150523 selected by Johnson, 1967, Occ. Papers on Moll. 3: 5, pl. 3, fig. 1.

averillii B. H. Wright, Unio: 1888, PANSP 40: 115, pl. 3, fig. 2 (Lake Ashby, Volusia Co., Florida). Lectotype USNM 91142 selected by Johnson, 1967, Occ. Papers on Moll. 3: 5, pl. 7, fig. 4.

brimleyi S. H. Wright, Unio: 1897, Nautilus 10: 138 ([Walnut Creek of] Neuse River, Raleigh [Wake Co.], North Carolina). The type locality restricted to Walnut Creek and lectotype USNM 149651 selected by Johnson, 1967, Occ. Papers on Moll. 3: 5, pl. 5, fig. 1.

bursapastoris B. H. Wright, Unio: 1896, Nautilus 9: 133, pl. 3, top and bottom figs. (Powell River [Lee Co.], Virginia). Figured holotype ANSP 67971, refigured by Johnson, 1967, Occ. Papers on Moll. 3: 5, pl. 13, fig. 1; specimen identified by Wright USNM 133427 figured by Johnson, Ibid. pl. 2, fig. 3.

burtchianus S. H. Wright, Unio: 1897, Nautilus 10: 137 (St. Mary's River, Nassau Co., Florida). Lectotype USNM 149653 selected by Johnson, 1967, Occ. Papers on Moll. 3: 5, pl. 8, fig. 4.

buxtoni B. H. Wright, Unio: 1897, Nautilus 11: 55 (Lakelets of Marion Co., Florida). Lectotype USNM 150131 selected by Johnson, 1967, Occ. Papers on Moll. 3: 5, pl. 11, fig. 4.

conjugans B. H. Wright, Unio: 1899, Nautilus 13: 89 (Hiawassa [Hiawassee] River, Polk Co., Tennessee). Holotype USNM 159501 figured by Simpson, 1900, PANSP 52: 79, pl. 4, fig. 1; refigured by Johnson, 1967, Occ. Papers on Moll. 3: 5, pl. 2, fig. 1.

cunninghami B. H. Wright, Unio: 1883, PANSP 35: 58, pl. 1, figs. 1-4 (Lakes of Sumter Co., Florida). The type locality restricted to Lake Harris, Yalaha, Lake Co., Florida and a Lectotype ANSP 41348a selected by Johnson, 1967, Occ. Papers on Moll. 3: 5, pl. 13, fig. 2; paralectotype USNM 152063 figured by Johnson, Ibid. pl. 10, fig. 1.

dallii B. H. Wright, Unio: 1888, PANSP 40: 119, pl. 6, fig. 1 (Lake Beresford, Volusia Co., Florida). Figured holotype USNM 151037 refigured by Johnson, 1967, Occ. Papers on Moll. 3: 5, pl. 10, fig. 2.

danielsii B. H. Wright, Unio: 1889, Nautilus 13: 31 (Spring Creek [a branch of the Flint River], Decatur Co., Georgia). Measured holotype USNM 168967 figured by Johnson, 1967. Occ. Papers on Moll. 3: 5, pl. 6, fig. 1.

diazensis S. H. Wright, Unio: 1899, Nautilus 11: 5 (Lake Diaz, Volusia Co., Florida). Lectotype USNM 149652 selected by Johnson, 1967, Occ. Papers on Moll. 3: 6, pl. 8, fig. 6.

dispalans B. H. Wright, Unio: 1899, Nautilus 13: 50 (Suwannee River, Florida). Holotype USNM 159986 figured by Simpson 1900, PANSP 52: 80, pl. 1, fig. 9; refigured by Johnson, 1967, Occ. Papers on Moll. 3: 6, pl. 8, fig. 3.

dorei B. H. Wright, Unio: 1888, PANSP 40: 115, pl. 3, fig. 1 (Lake Monroe, [Volusia Co.], Florida). Holotype USNM 151034, refigured by Johnson, 1967, Occ. Papers on Moll. 3: 6, pl. 9, fig. 2.

friersoni B. H. Wright, Unio: 1896, Nautilus 9: 134, pl. 3 (Bayou Pierre, an arm of the Red River in De Soto Parish, Louisiana). Lectotype USNM 133432 selected by Johnson, 1967, Occ. Papers on Moll. 3: 6, pl. 5, fig. 4.

fryanus B. H. Wright, Unio: 1888, PANSP : 113, pl. 2, fig. 1 (Lake Ashby, Volusia Co., Florida). Holotype USNM 151932 refigured by Johnson, 1967, Occ. Papers on Moll. 3: 6, pl. 8, fig. 5.

harperi B. H. Wright, Unio: 1898, Nautilus 13: 6 (Altamaha River, Liberty Co., Georgia; Suwannee River, Madison Co., Florida; Spring Creek, a branch of the Flint River, Decatur Co., Georgia). The type locality restricted to Spring Creek, Decatur Co., Georgia, by Johnson, 1967, Occ. Papers on Moll. 3: 6. Holotype USNM 159197 figured by Simpson, 1900, PANSP 52: 81, pl. 1, fig. 10; refigured by Johnson, 1967, Occ. Papers on Moll. 3: 6, pl. 4, fig. 3.

hartii B. H. Wright, Unio (Elliptio) webbianus: 1934, Nautilus 47: 95, pl. 10, figs. 3-4 (Lake Consuelo, near Floral City [or Little Lake, S E Floral City, just outside village limits], Citrus Co., Florida). Holotype USNM 424925, refigured by Johnson, 1967, Occ. Papers on Moll. 3: 6, pl. 9, fig. 5.

hartwrightii B. H. Wright, Unio: 1896, Nautilus 9: 121, pl. 2, figs. 4-6 (Lake Beresford [Volusia Co.], Florida). The type locality restricted to St. Johns River, Blue Springs, 3 mi. S of Lake Beresford, Volusia Co., Florida, and the holotype USNM 151031 refigured by Johnson, 1967, Occ. Papers on Moll. 3: 6, pl. 7, fig. 1.

hinkleyi, B. H. Wright, Unio: 1888, PANSP 40: 117, pl. 4, fig. 2 (Lake Monroe [Volusia Co.], Florida). Holotype USNM 151033 refigured by Johnson, 1967, Occ. Papers on Moll. 3: 7, pl. 11, fig. 1.

iheringi B. H. Wright, Unio: 1898, Nautilus 12: 93 (San Saba River, Menard Co., Texas). Holotype USNM 152171 figured by Simpson, 1900, PANSP 52: 79, pl. 4, fig. 5; refigured by Johnson, 1967, Occ. Papers on Moll. 3: 7, pl. 4, fig. 2.

kingii B. H. Wright, Unio: 1900, Nautilus 13: 138 (a branch of the Flint River, Baker Co., Georgia). Measured holotype USNM 159965 figured by Johnson, 1967, Occ. Papers on Moll. 3: 7, pl. 5, fig. 6.

kirklandianus S. H. Wright, Unio: 1897, Nautilus 10: 136 (Ocklocknee [Ochlockonee] River, Leon Co., Florida). Holotype USNM 149648 figured by Simpson, 1900, PANSP 52: 76, pl. 1, fig. 7; refigured by Johnson, 1967, Occ. Papers on Moll. 3: 7, pl. 5, fig. 3.

lehmanii S. H. Wright, Unio: 1897, Nautilus 10: 138 (St. Marys River [Nassau Co.], Florida). Lectotype USNM 149650 (figured by Simpson, 1900, PANSP 52: 80, pl. 4, fig. 6) selected and refigured by Johnson, 1967, Occ. Papers on Moll. 3: 7, pl. 6, fig. 3.

marshii B. H. Wright, Unio: 1888, PANSP 40: 118, pl. 5, fig. 2 (Lake Woodruff Volusia Co., Florida). The type locality restricted to St. Johns River, Blue Springs, 3 mi. S of Lake Beresford, Volusia Co., Florida, and ^{the} holotype USNM 151028 refigured by Johnson, 1967, Occ. Papers on Moll. 3: 7, pl. 12, fig. 2.

maywebbae B. H. Wright, Elliptio: 1934, Nautilus 48, 28; 47, pl. 13, figs. 5-8 (near Seminole Springs [3.4 mi. NE Sorrento] 15 mi. SE Eustis [Lake Co.], Florida). Holotype USNM 425354, refigured by Johnson, 1967, Occ. Papers on Moll. 3: 7, pl. 10, fig. 3.

nolani B. H. Wright, Unio: 1888, PANSP 40: 116, pl. 4, fig. 1 (a creek flowing into St. Johns River, near Palatka [Putnam Co.], Florida). Holotype USNM 151030, refigured by Johnson, 1967, Occ. Papers on Moll. 3: 7, pl. 10, fig. 4.

orcuttii S. H. Wright, Unio: 1888, Western American Scientist 4: 60, pl. 3, figs. ([Horse Creek] near Manatee River [Manatee Co.]; West Coast of Florida; Lake Miakka, Florida). The type locality restricted to Horse Creek by Johnson, 1967, Occ. Papers on Moll. 3: 8, but since that locality is probably erroneous, it was rerestricted to Upper Miakka Lake, Sarasota Co., Florida by Johnson, 1972, Bull. Florida State Mus. 16: 211. Holotype USNM 308971 refigured by Johnson, 1967, Occ. Papers on Moll. 3: 7, pl. 9, fig. 1.

oscar B. H. Wright, Unio: 1892, Nautilus 5: 124 (a creek from Lake Osceola, at Winter Park [Orange Co.], Florida); 1896, Nautilus 9: 122, pl. 2, figs. 1-3. Lectotype USNM 123526 selected by Johnson, 1967, Occ. Papers on Moll. 3: 8, pl. 11, fig. 3.

pinei B. H. Wright, Unio: 1897, Nautilus 11: 40 (unnamed lake in Witthacoochee [Withlacoochee] River region of Hernando Co., Florida). Holotype USNM 150127 figured by Simpson, 1900, PANSP 52: 80, pl. 3, fig. 1; refigured by Johnson, 1967, Occ. Papers on Moll. 3: 8, pl. 10, fig. 5.

pinkstonii S. H. Wright, Unio: 1897, Nautilus 10: 136 (Tuscaloosa [Tallapoosa] River, Macon Co., Alabama). Lectotype USNM 149649 (figured by Simpson, 1900, PANSP 52: 81, pl. 1, fig. 8) selected and refigured by Johnson, 1967, Occ. Papers on Moll. 3: 8, pl. 5, fig. 2.

polymorphus B. H. Wright, Unio: 1899, Nautilus 13: 42 (Spanish Creek [a tributary of St. Marys River, W of Folkston], Okefenokee Swamp, Charlton Co., Florida). Lectotype USNM 152060 selected by Johnson, 1967, Occ. Papers on Moll. 3: 8, pl. 6, fig. 2.

reclusus B. H. Wright, Unio: 1898, Nautilus 11: 111 (Ocklocknee [Ochlockonee] River, Leon Co., Florida). Holotype USNM 151029 figured by Simpson, 1900, PANSP 52: 82, pl. 1, fig. 2; refigured by Johnson, 1967, Occ. Papers on Moll. 3: 8, pl. 4, fig. 5.

rotulatus B. H. Wright, Unio: 1899, Nautilus 13: 22 (Escambia River, Escambia Co., Florida). Holotype USNM 159969 figured by Simpson, 1900, PANSP 52: 78, pl. 4, fig. 2; refigured by Johnson, 1967, Occ. Papers on Moll. 3: 8, pl. 4, fig. 4.

sanctrumjohani B. H. Wright Unio (Elliptio): 1933, Nautilus 47: 17, pl. 1 (Lake Druid, near Floral City [Citrus Co.], Florida). Holotype USNM 424738 refigured by Johnson, 1967, Occ. Papers on Moll. 3: 8, pl. 9, fig. 2.

simpsoni B. H. Wright, Unio: 1888, PANSP 40: 117, pl. 5, fig. 1 (Lake Woodruff, Volusia Co., Florida). Holotype USNM 151038 refigured by Johnson, 1967, Occ. Papers on Moll. 3: 8, pl. 8, fig. 2.

singularis B. H. Wright, Unio: 1899, Nautilus 13: 75 (Spring Creek [a branch of the Flint River], Decatur Co., Florida). Measured holotype USNM 159988 figured by Johnson, 1967, Occ. Papers on Moll. 3: 8, pl. 5, fig. 7.

strigillatus B. H. Wright, Unio cylindricus: 1898, Nautilus 12: 6 (Clinch [Powell] River [Jonesville], Lee Co., Virginia). Lectotype USNM 151737 selected by Johnson, 1967, Occ. Papers on Moll. 3: 9, pl. 3, fig. 2.

strodeanus B. H. Wright, Unio: 1898, Nautilus 12: 5 (Escambia River, West Florida). Lectotype USNM 150498 selected by Johnson, 1967, Occ. Papers on Moll. 3: 9, pl. 4, fig. 1.

suttoni B. H. Wright, Unio: 1897, Nautilus 11: 56 ([Smith] Lake near Candler, Marion Co., Florida). Measured holotype USNM 150129 figured by Johnson, 1967, Occ. Papers on Moll. 3: 9, pl. 11, fig. 2.

swordianus S. H. Wright, Unio: 1899, Nautilus 11: 4 (Powell Creek [River], Lee Co., Virginia). Lectotype USNM 149654 selected by Johnson, 1967, Occ. Papers on Moll. 3: 9, pl. 3, fig. 3.

tinkeri B. H. Wright, Unio: 1899, Nautilus 13: 7 (Tombigbee River [Moscow, Lamar Co.], Alabama). Holotype USNM 159193 figured by Simpson, 1900, PANSP 52: 78, pl. 4, fig. 3; refigured by Johnson, 1967, Occ. Papers on Moll. 3: 9, pl. 1, fig. 2.

triumphans B. H. Wright, Unio: 1898, Nautilus 11: 101 (Coosa River, St. Clair Co., Alabama). Holotype USNM 150554 figured by Simpson, 1900, PANSP 52: 83, pl. 3, fig. 3; refigured by Johnson, 1967, Occ. Papers on Moll. 3: 9, pl. 1, fig. 1.

truncata B. H. Wright, Margaritana marginata: 1898, Nautilus 11: 124 (occurs in eastern as well as western waters and into Virginia and Tennessee). Lectotype USNM 150545 from the Clinch River, Virginia, selected by Johnson, 1967, Occ. Papers on Moll. 3: 9, pl. 4, fig. 6.

tryoni, B. H. Wright, Unio: 1888, PANSP 40: 120, pl. 6, fig. 2 (Lake Woodruff [Spring Garden Lake], near De Leon Springs, Volusia Co., Florida). Holotype USNM 151036 refigured by Johnson, 1967, Occ. Papers on Moll. 3: 9, pl. 12, fig. 1.

unicostatus B. H. Wright, Unio: 1899, Nautilus 43: 69 (Spring Creek [a branch of the Flint River], Decatur Co., Georgia). Lectotype USNM 159966 selected by Johnson, 1967, Occ. Papers on Moll. 3: 9, pl. 7, fig. 3.

villosus B. H. Wright, Unio: 1898, Nautilus 12: 32 (Suwannee River [Luraville], Suwannee Co., Florida). Lectotype USNM 150503 (figured by Simpson, 1900, PANSP 52: 77, pl. 1, fig. 1) selected and refigured by Johnson 1967, Occ. Papers on Moll. 3: 9, pl. 8, fig. 1.

walkeri B. H. Wright, Unio: 1897, Nautilus 11: 91 (Suwannee River [Ellaville], Madison Co., Florida). Lectotype USNM 150506 (figured by Simpson, 1900, PANSP 52: 77, pl. 1, fig. 5) selected and refigured by Johnson, 1967, Occ. Papers on Moll. 3: 9, pl. 5, fig. 5.

waltoni B. H. Wright, Unio: 1888, PANSP 40: 114, pl. 2, fig. 3
(Lake Woodruff, Volusia Co., Florida). Lectotype USNM
91145 selected by Johnson, 1967, Occ. Papers on Moll. 3: 9,
pl. 11, fig. 5.

webbianus B. H. Wright, Unio (Elliptio): 1934, Nautilus 47:
94, pl. 10, figs. 1-2 (Lake Consuelo [or Little Lake, SE
Floral City, just outside village limits] near Floral City
Citrus Co., Florida). Holotype USNM 424923, refigured by
Johnson, 1967, Occ. Papers on Moll. 3: 10, pl. 9, fig. 4.
websterii B. H. Wright, Unio: 1888, PANSP 40: 113, pl. 2, fig. 2
(Lake Woodruff, Volusia Co., Florida). Lectotype USNM
125697 selected by Johnson, 1967, Occ. Papers on Moll. 3:
10, pl. 7, fig. 2.

LITERATURE CITED

Boss, K. J., J. Rosewater and F. A. Ruhoff. 1968. The Zoological taxa of William Healey Dall. United States Natl. Mus. Bull., no. 287, pp. 1-427.

Franzen, D. S. 1956-1958. Types of mollusks described by F. C. Baker. 1. University of Illinois. 1956, *Nautilus* 70 (1): 21-27.

2. University of Wisconsin. 1957. *Nautilus* 71 (1): 30-36.

3. Chicago Academy of Sciences. 1958, *Nautilus* 72 (1): 30-34.

Johnson, R. I. 1956. The types of Naiades (Mollusca: Unionidae) in the Museum of Comparative Zoology. *Bull. Mus. Comp. Zool.* 115 (4): 102-142, pls. 1-2.

_____. 1964. The Recent Mollusca of Augustus Addison Gould. *U. S. Natl. Mus. Bull.* no. 239: i-v, 182, pls. 1-45.

_____. 1967. Illustrations of all the mollusks described by Berlin Hart and Samuel Hart Wright. *Occ. Papers on Moll.*, Harvard Univ. Cambridge, Mass. 3 (35): 1-35, pls. 1-13.

_____. 1969. Illustrations of Lamarck's types of North American Unionidae mostly in the Paris Museum. *Nautilus* 83 (2): 52-61, figs. 1-14.

Johnson, R. I. 1971. The types and figured specimens of Unionacea (Mollusca: Bivalvia) in the British Museum (Natural History). Bull. British Mus. (Nat. Hist.) 20 (3): 75-108, pls. 1-2.

_____. 1972. Illustrations of all of the mollusks described by Lorraine Screven Frierson. Occ. Papers on Moll., Harvard Univ. Cambridge, Mass. 3 (41): 137-173, pls. 22-32.

_____. 1973. Heude's Molluscan Types or Asian land and fresh water mollusks, mostly from the People's Republic of China described by P. M. Heude. Special Occ. Pub. Dept. Moll. Mus. Comp. Zool. no. 1: 1-111.

_____. 1974 a. Lea's Unionid types or recent and fossil taxa of Unionacea and Mutelacea introduced by Isaac Lea, including the location of all the extant types. Special Occ. Pub. Dept. Moll., Mus. Comp. Zool. no. 2: 1-159.

_____. 1974 b. Marshall's Unionid types or types of recent and fossil Unionacea and Mutelacea introduced by William B. Marshall, including a bibliography of all of his writings on mollusks. Special Occ. Pub. Dept. Moll., Mus. Comp. Zool. no. 3: 1-14.

Johnson, R. I. 1975 a. R. Ellsworth Call with a bibliography of his works on Mollusks and a catalogue of his taxa. Occ. Papers on Moll., Harvard Univ. Cambridge, Mass. 4 (54): 133-144, pl. 15.

_____. 1975 b. William A. Marsh, his introduced taxa of Unionidae, or fresh water mussels. Occ. Papers on Moll., Harvard Univ. Cambridge, Mass. 4 (54): 145-147.

Johnson, R. I. and H. B. Baker. 1973. The types of Unionacea (Mollusca: Bivalvia) in the Academy of Natural Sciences of Philadelphia. Proc. Acad. Nat. Sci. Phila. 125 (9): 145-186, pls. 1-10.

Rosewater, J. 1959. Calvin Goodrich; a bibliography and catalogue of his species. Occ. Papers on Moll. 2 (24): 189-208.

Ruhoff, F. A. 1973. Bibliography and zoological taxa of Paul Bartsch. Smithsonian Cont. to Zool., no. 143, pp. 1-166.

Fig. 1. Truncilla sulcata delicata Simpson. Detroit River, Amherstburg, Essex Co., Ontario. Holotype USNM 160853. Length 44, height 31, width 24 mm.

Fig. 2. Lampsilis ligamentinus nigrescens Simpson. Kankakee River, Illinois. Lectotype USNM 150410. Length 106, height 57, width 35 mm.

Fig. 3. Actinonaias carinata orbis Morrison. Tennessee River, Florence, Lauderdale Co., Alabama. Holotype USNM 84998. Length 66, height 35, width 32 mm.

Fig. 4. Lampsilis subrostrata furva Simpson. Lectotype USNM 126921. Lake at Warsaw, Kosciusko Co., Indiana. Lectotype USNM 126921. Length 63.5, height 31, width 21 mm. Female.

Fig. 5. Lampsilis texensis compressus Simpson. Las Moras Creek, Fort Clark, Kinney Co., Texas. Lectotype USNM 152059. Length 41.5, height 25, width 12 mm.

Fig. 6. Lampsilis subrostrata furva Simpson. Lake at Warsaw, Kosciusko Co., Indiana. Allotype USNM 126921a. Length 69.5, height 29, width 19.5 mm. Male.

Fig. 7. Obovaria subrotunda globula Morrison. Tennessee River, Tuscumbia, Colbert Co., Alabama. Holotype USNM 85789. Length 27, height 27, width 18 mm.

Fig. 8. Obovaria lens parva Simpson. Duck River, Tennessee. Lectotype USNM 150457. Length 29, height 27, width 18.5 mm.

Fig. 9. Obovaria lens elongata Simpson. Ohio River, Cincinnati, Hamilton Co., Ohio. Lectotype USNM 85734. Length 47, height 39, width 34 mm.

Fig. 10. Diplodon leai Simpson. Brazil. Holotype USNM 85725. Length 28, height 17, width 13 mm.

Fig. 11. Obovaria nux Simpson. Tombigbee River, Moscow, Lamar Co., Alabama. Holotype USNM 152968. Length 40, height 30, width 25 mm.

Fig. 12. Unio ferussacianus Lea. Baghdad, Iraq. Holotype USNM 85182. Length 48, height 31.5, width 26 mm.

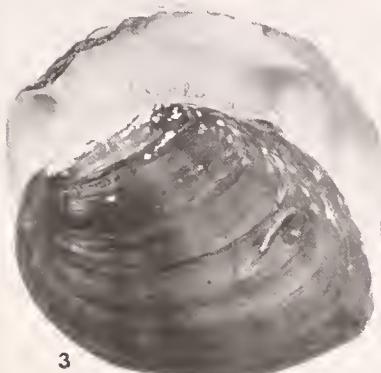
Fig. 13. Tritogonia tuberculata obesa Simpson. Big Eddy, Neches River, Henderson Co., Texas. Lectotype USNM 125669. Length 80, height 56, width 38 mm.



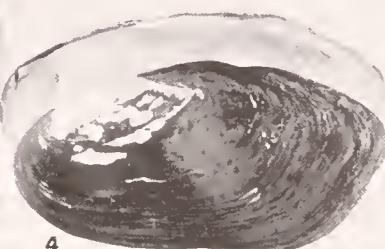
1



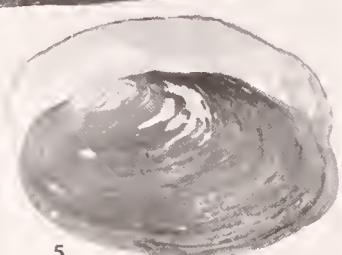
2



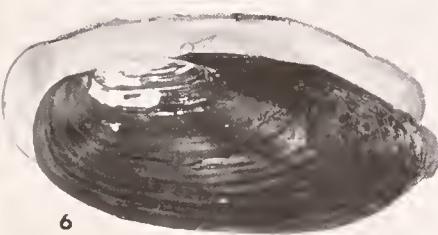
3



4



5



6



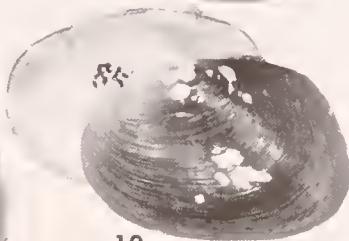
7



8



9



10



11



12



13

Plate 2

Fig. 1. Anodon [ta] horda Gould. Comanche Creek, tributary of the Llano River, close to the present site of Mason, Mason Co., Texas. Holotype USNM 678301. Length 90, height 44, width 38 mm.

Fig. 2. Cyprogenia irrorata pusilla Simpson. Green River, Mammoth Cave, Edmonson Co., Kentucky. Lectotype USNM 152004. Length 43, height 37, width 29 mm.

Fig. 3. Unio gibbosus delicatus Simpson. St. Francis River, Greenway, Clay Co., Arkansas. Holotype USNM 128797. Length 98, height 36, width 18 mm.

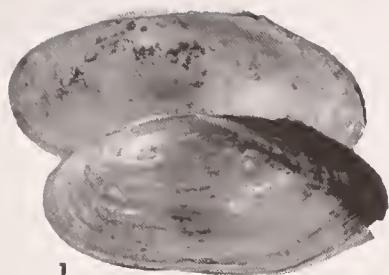
Fig. 4. Pleurobema avellana Simpson. Cahawba River, Alabama. Holotype MZUM 79653. Length 30, height 20, width 15 mm.

Fig. 5. Unio mitchelli elongatus Simpson. Guadalupe River, near Kerrville, Kerr Co., Texas. Lectotype USNM 251917. Length 84, height 46, width 28 mm.

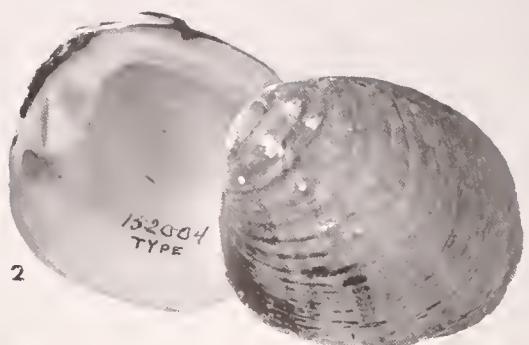
Fig. 6. Pleurobema fassinans rhomboidea Simpson. Upper waters of the Clinch River, Virginia. Lectotype USNM 133331. Length 62, height 41, width 23 mm.

Fig. 7. Pleurobema brevis subellipticum Simpson. Spring Creek, Hardy, Fulton Co., Arkansas. Lectotype USNM 159952. Length 56, height 37, width 21 mm.

Fig. 8. Quadrula castanea Simpson. Tombigbee River, Moscow, Lamar Co., Alabama. Lectotype USNM 159959. Length 63.5, height 44, width 28 mm.



1



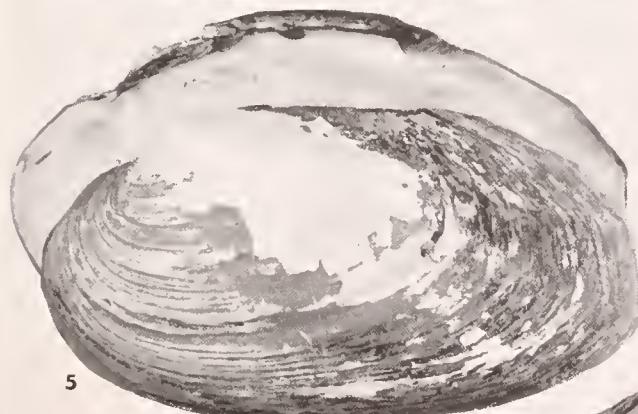
2



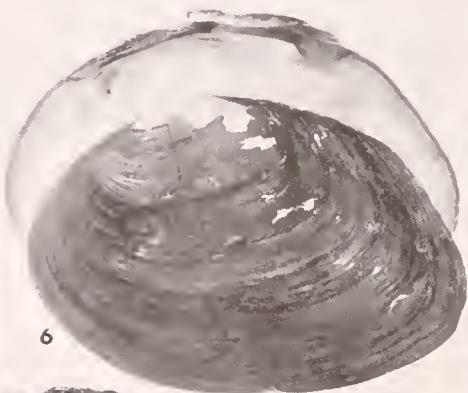
3



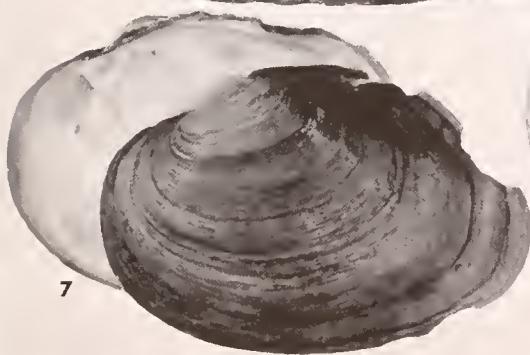
4



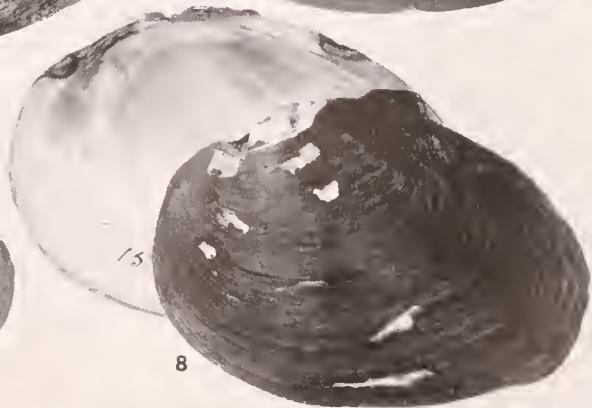
5



6



7



8

Plate 3

Fig. 1. Quadrula coccinea magnalacustris Simpson. Niagara River, 3 mi. above Niagara Falls, Niagara Co., New York. Lectotype USNM 134834. Length 49, height 39, width 23 mm.

Fig. 2. Quadrula flexuosa Simpson. Holston River, Tennessee. Type in the Frierson Colln. MZUM [lost]. Length 65, height 55, width 33 mm (from Simpson, reduced).

Fig. 3. Quadrula biangulata Morrison. Tennessee River, Tuscumbia, Colbert Co., Alabama. Holotype USNM 84221. Length 34, height 30, width 21 mm.

Fig. 4. Unio fallaciosus Simpson. Lake Nicaragua, Central America. Holotype USNM 73062. Length 32, height 23, width 17 mm.

Fig. 5. Quadrula kirtlandiana minor Simpson. Clinch River, Scott Co., Virginia. Lectotype USNM 150155. Length 63, height 47, width 23 mm.

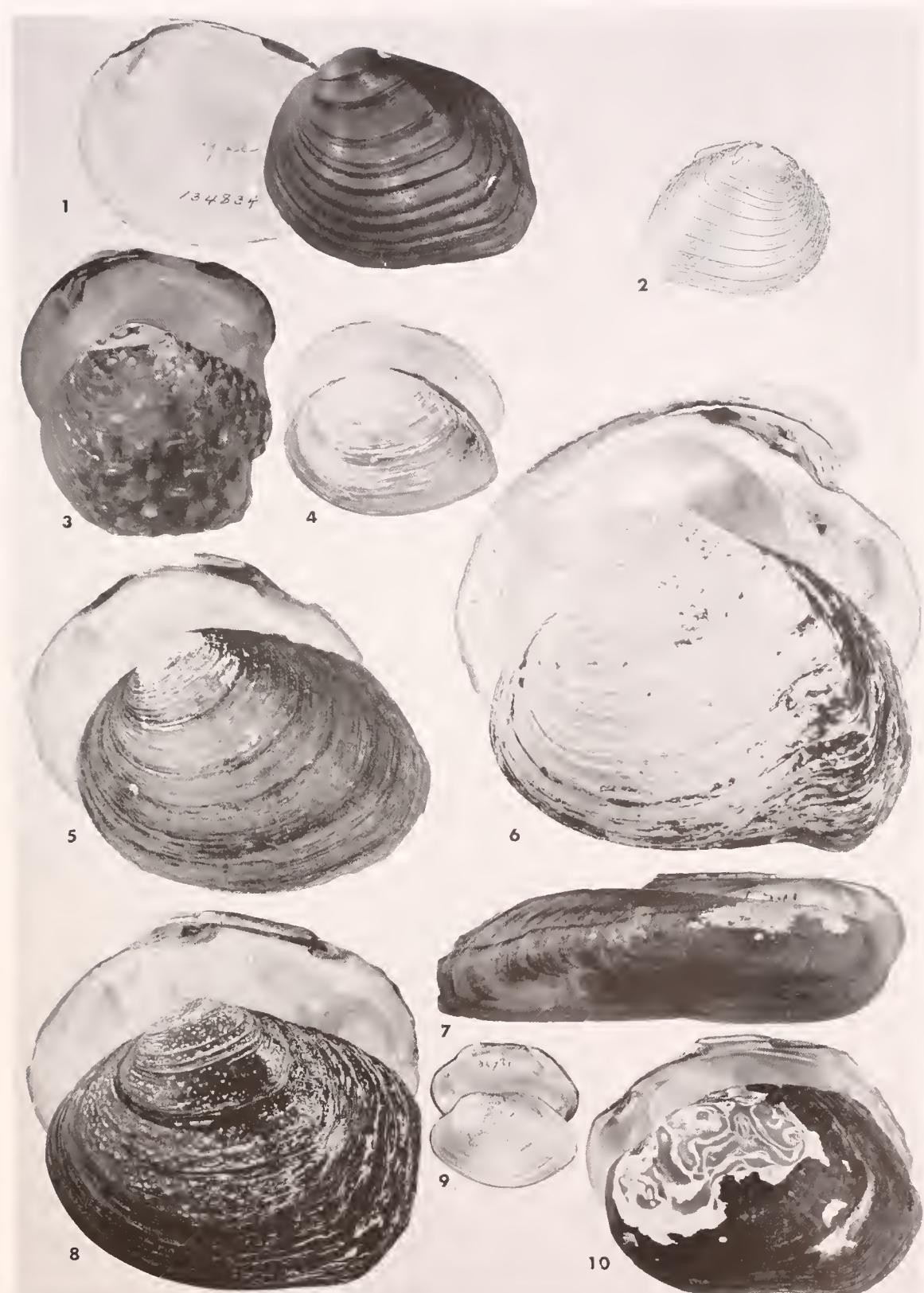
Fig. 6. Quadrula profunda Simpson. Usumacinta River, Guatemala. Holotype USNM 128978 [Single valve]. Length 77, height 64, width 55 mm.

Fig. 7. Glabaris falsus Simpson. Yuruari River, a branch of the Orinoco River, Venezuela. Holotype USNM 86711. Length 76, height 21, width 11 mm.

Fig. 8. Quadrula quadrata Simpson. Usumacinta River, Guatemala. Lectotype USNM 128996. Length 67, height 52, width 32 mm.

Fig. 9. Anodontites trigonus pallescens Simpson. Amazon River, Brazil. Holotype USNM 86731. Length 47, height 31, width 21 mm.

Fig. 10. Quadrula radulosa rhomboidea Simpson. Selrocany, Borneo. Holotype USNM 126472a. Length 57, height 37, width 22 mm.







Harvard MCZ Library



3 2044 066 302 902

